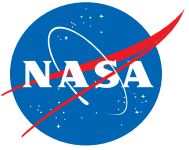





Overview of NASAs SBIR & STTR Programs

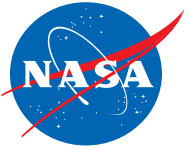
Gynelle Steele
NASA Glenn Research Center
216-433-8258

8/31/10

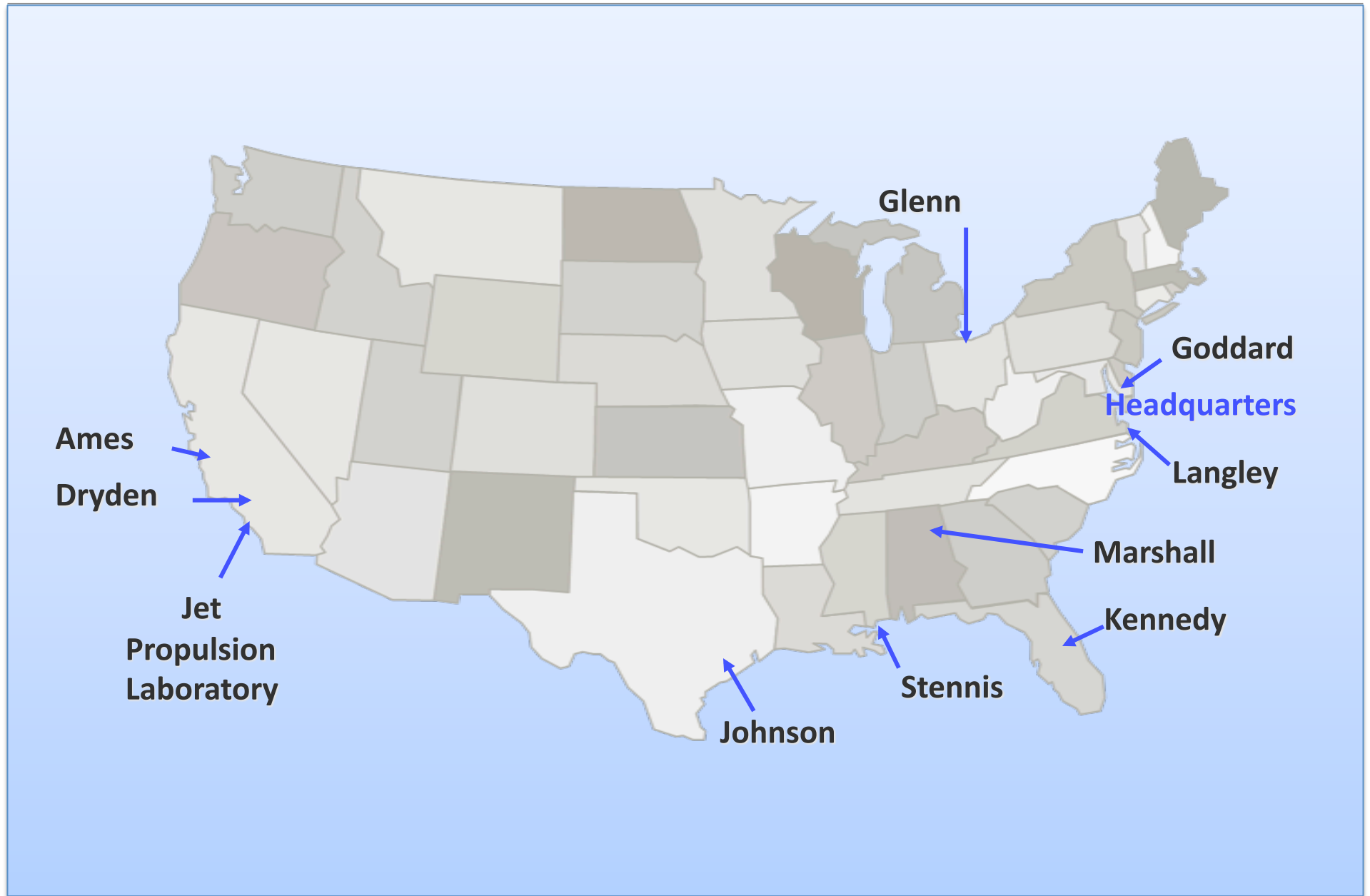


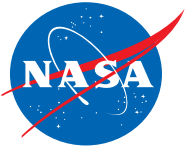
Congressional Objectives

-  **Stimulate technological innovation**
-  **Use small business to meet federal R&D needs**
-  **Foster and encourage participation by minorities and disadvantaged persons in technological innovation**
-  **Increase private-sector commercialization innovations derived from federal R&D**



NASA Participating Centers

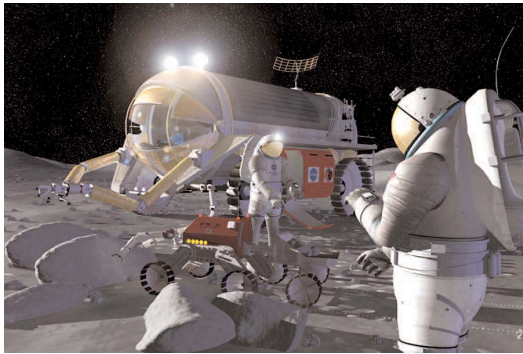




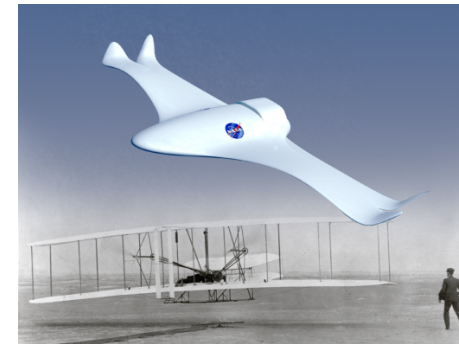
Mission Driven!

Partnership with Mission Directorates Drives SBIR/STTR Investment

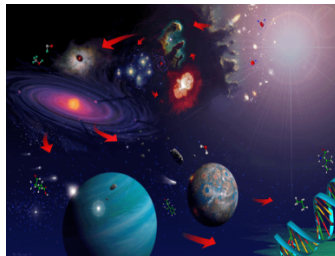
Exploration Systems



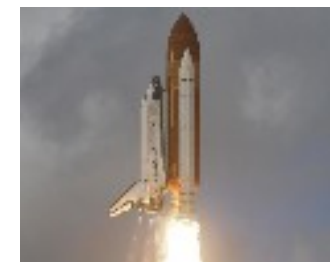
Aeronautics Research

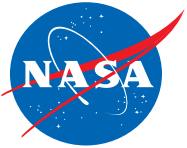


Science



Space Operations

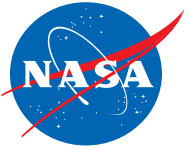




Focus on Technology Infusion

- ☒ **10 infusion-focused office**
- ☒ **4 Mission Directorate Liaison admin offices**
- ☒ **Alignment with MD objectives**
- ☒ **Decision support for MDs on technology gaps & priorities**
- ☒ **Cross-cutting areas that involve multiple MDs assigned to single offices**
- ☒ **Technology Infusion Managers at all NASA Centers**
- ☒ **All Centers continue to execute SBIR/STTR Contracts**
- ☒ **Technology Readiness Level (TRL) now being tracked as a part of SBIR/STTR**

SBIR MD Liaison Offices	Mission Directorate Focus	Cross Cutting Programs
Glenn Research Center	ARMD	•Comm •LCRATS
Langley Research Center	ESMD	
Jet Propulsion Laboratory	SMD	
Ames Research Center	SOMD	• SmallSats • Human Life Sciences

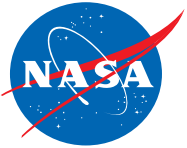


NASA SBIR/STTR 2009 Budget

SBIR ~ \$160M
STTR ~ \$13.6M



SBIR - Phase I Contracts: \$100K (6 months)
STTR - Phase I Contracts: \$100K (12 months)
SBIR/STTR - Phase II Contracts: \$600K (2 years)



SBIR/STTR: 3-Phase Program



Phase 1

- Feasibility study
- \$100K award
- 6 months duration (SBIR)
- 12 months duration (STTR)

SBIR	FY06	FY07	FY08	FY09	FY10
Millions of \$	105.6	116.3	103 (86.9*)	113.4	124**
Phase 1 Awards	267	259	276	352	330***
Phase 2 Awards	186	130	122	143	152

*adjusted for FY08 funding rescission

** Current N2 projection

*** projected number of awards



Phase 2

- Technology Development
- 2-Year Award
- \$600K (SBIR/STTR)

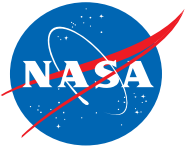
STTR	FY06	FY07	FY08	FY09	FY10
Millions of \$	12.3	13.4	13.2	13.6	14.1**
Phase 1 Awards	27	25	27	32	35***
Phase 2 Awards	22	18	9	16	TBD

** Current N2 projection



Phase 3

- Technology Infusion/Commercialization Stage
- Use of non-SBIR Funds
- Ability to award sole-source contracts without JOFOC based on specific SBIR authority – NASA and NASA primes.



NASA Strategic Approach

Every technology development investment dollar is critical to the ultimate success of NASA's mission

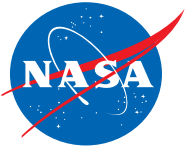
- Ensure alignment and integration with Mission Directorates' priorities
- Investments should be complementary with technologies being pursued by
 - other IPP investments and partnerships
 - Mission Directorates' programs and projects
 - prime contractors
 - other agency SBIR/STTR investments

Ultimate objective is to achieve infusion of critical technologies into NASA's Mission Directorates'

- flight programs/projects
- ground or test systems
- or other uses to advance NASA's mission

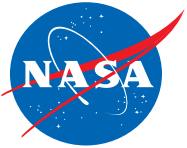
Mission Directorates establish high priority needs and existing gaps

- High priority needs are developed into topics for the annual solicitation
- Subtopics may be clustered to support the development and maturation of critical technologies for infusion



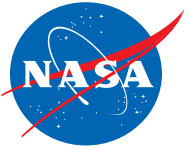
Why Participate in SBIR/STTR?

1. Over \$2.25 Billion available every year
2. Funds are NOT A LOAN - no repayment
3. Small businesses retain intellectual property rights
4. Provides seed money to fund high risk projects
5. Develop working relationship & credibility with government R&D
6. Fosters partnerships with large corporations and academia
7. Provides recognition and visibility for your business
8. Participation attracts venture capital and other funding sources



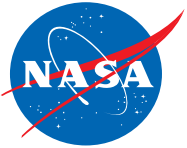
Before Submitting a Proposal

- ☒ Review prior year solicitation: <http://sbir.nasa.gov/>.
- ☒ Search and identify specific technical areas (subtopics) and lead center(s) of your interest.
- ☒ Request subject matter expert contact information from respective field center program POCs.
- ☒ E-mail/Call technical POCs and initiate dialogues.
- ☒ Learn technology needs and priorities.
- ☒ Visit and brief NASA on your companies capabilities, if the opportunity presents itself.



How to Win - Follow the Directions

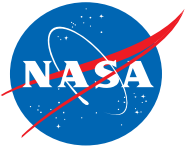
- ◆ **Start early and do your homework**
- ◆ **Prepare your proposal in accordance with the solicitation instructions or your proposal may be rejected administratively. Note that each Agency's administrative requirements may differ.**
- ◆ **Address all areas that will be scored in the evaluation**
- ◆ **Don't underestimate the importance of commercialization**
- ◆ **Lay out the evaluation criteria and write to satisfy the reviewers**
- ◆ **Don't pad the proposal to get to the 25 page limit**
- ◆ **Don't subcontract Government facilities or equipment with SBIR funds**
- ◆ **Comply with Conflict of Interest rules**
- ◆ **If appropriate, form a team with universities or other companies**
- ◆ **Get advice from your local small business advisory resources**
- ◆ **Get an independent review of your proposal prior to submission**
- ◆ **Submit your proposal electronically prior to the final 24 hour rush.**



Submission Process

- ☒ All proposals are submitted electronically via the internet
- ☒ Make sure all parts of your proposal are received on time – late proposals are rejected
- ☒ Proposals are screened for administrative completeness and turned over to the managing NASA Center for technical review





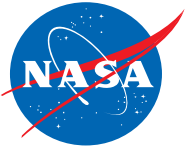
Proposal Review & Selection Criteria

Proposal Review

- Factor 1: scientific/technical merit and feasibility (50%)
- Factor 2: experience, qualifications and facilities (25%)
- Factor 3: effectiveness of the proposed work plan (25%)
- Factor 4: commercial merit and feasibility (adjectival)

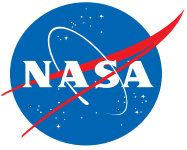
Proposal Ranking and Selection

- NASA Project/Mission Alignment
- Value, Priority and Infusion Potentials
- Champion/Advocate



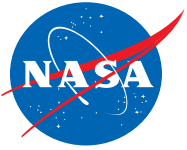
Nature of NASA SBIR & STTR Contracts

- ☒ **SBIR contracts are fixed price contracts to be completed on a best effort basis.**
- ☒ **Company will own resulting intellectual property (data, copyrights, patents, etc.).**
- ☒ **Government has royalty-free rights for government use of intellectual property.**
- ☒ **Government protects data from public dissemination for four years after contract ends.**
- ☒ **NASA is a potential customer.**



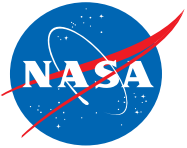
SBIR – Eligibility Checkpoints

- ☒ **Organized for-profit U.S. small business (500 or fewer employees)**
- ☒ **At least 51% U.S. owned and independently operated**
- ☒ **Small business located in the U.S.**
- ☒ **P.I.'s primary employment with small business during the project**



Some Important Facts to Remember

- ◆ Eligibility is determined at time of award
- ◆ No appendices allowed in Phase I
- ◆ The PI is not required to have a Ph.D.
- ◆ The PI is required to have expertise to oversee project scientifically and technically
- ◆ Applications may be submitted to different agencies for similar work
- ◆ Awards may not be accepted from different agencies for duplicative projects



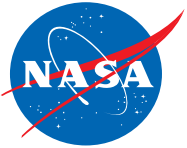
SBIR/STTR Program Schedule

2010 Program Solicitation

- Opening Date: 07/19/2010*
- Closing Date: 09/02/2010
- Selections: 11/22/2010



<http://sbir.nasa.gov>



<http://sbir.gsfc.nasa.gov/SBIR/SBIR.html>

**SMALL BUSINESS INNOVATION RESEARCH**
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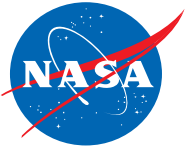
NEWS
[+ SBIR 2008 Phase 2 Selection Announcement](#)
October 6, 2009
[+ SBIR/STTR ARRA Phase 2 Selection Announcement](#)
September 14, 2009
[+ SBIR/STTR Additional Phase 2 Selection Announcement](#)
August 28, 2009
[+ The Concept SBIR/STTR Quarterly Newsletter](#)
[+ TechSource - An easy way to search recently funded SBIR/STTR Phase 2 technologies](#)


2009 Solicitation

FEATURED SITES





Innovative Partnership Program

Spinoff Online - Commercialized NASA Technologies

Tech Briefs - NASA Engineering Solutions Magazine

UPCOMING EVENTS
[3rd Annual NASA Supply Chain Quality Assurance Conference](#)
NASA Goddard Space Flight Center, Greenbelt, MD
October 14 - 16, 2009
[National SBIR Fall 2009 Conference](#)
Reno, NV
November 2 - 5, 2009





SBIR/STTR Center Points of Contact - 1

SBIR Program Management



-  Carl Ray, NASA's SBIR & STTR Program Executive (HQs)
-  Dr. Gary Jahns, Manager SBIR/STTR Program Management Office (ARC)
-  Dr. Rich Pisarski, Technology Infusion Manager (ARC)
-  Carlos Torrez, Business Manager (ARC)

SBIR Program Managers for each Mission Directorate, and Technology Infusion Managers:

Ames Research Center (ARC)

-  Luis Mederos, 650-604-5268, Luis.Mederos@nasa.gov (SOMD)
-  Kim Hines, 650-604-5582, Kimberly.K.Hines@nasa.gov

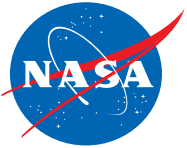
Dryden Flight Research Center (DFRC)

-  Ron Young, 661-276-3872, Ron.Young@nasa.gov
-  Elizabeth Newcamp, 661-, Elizabeth.D.Newcamp@nasa.gov

Glenn Research Center (GRC)

-  Gynelle Steele, 216-433-8258, Gynelle.C.Steele@nasa.gov (ARMD)
-  Dean Bitler, 216-433-2226, Dean.Bitler@nasa.gov

Goddard Space Flight Center (GSFC)



SBIR/STTR Center Points of Contact - 2

-  **Jet Propulsion Laboratory (JPL)**
-  **Indrani Grackyz, 818-354- (SMD)**
-  **Dr. Carol Lewis, 818-354-3767, Carol.R.Lewis@jpl.nasa.gov**

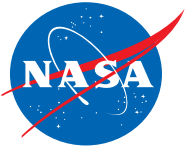
-  **Johnson Space Center (JSC)**
-  **Kathy Packard, 281-244-5378, Kathryn.B.Packard@nasa.gov**

-  **Kennedy Space Center (KSC)**
-  **Joni Richards, 321-867-2225, Joni.M.Richards@nasa.gov**

-  **Langley Research Center (LaRC)**
-  **Bob Yang, 757-864-8020, Robert.L.Yang@nasa.gov (ESMD)**
-  **Kimberly Graupner, 757-864-8618, Kimberly.E.Graupner@nasa.gov**

-  **Marshall Space Flight Center (MSFC)**
-  **Lynn Garrison, 256-544-6719, Virginia.B.Garrison@nasa.gov**

-  **Stennis Space Center (SSC)**
-  **Ray Bryant, 228-688-3964, Ray.Bryant-1@nasa.gov**



Challenge

Help us determine how we can create a more effective partnership between the genius of the American entrepreneur and the power of the federal government.

--Charlie Bolden, NASA Administrator



National Aeronautics and Space Administration

www.nasa.gov



Compact Low Cost Hazardous Gas Detection System

Makel Engineering, Inc.
Chico, CA

INNOVATION

Timely and accurate leak detection
or miniaturization of sensor size and electronics
and reliable operation in inert environments

ACCOMPLISHMENTS

- ◆ Base technology developed through NASA Marshall STTR
- ◆ Chosen for inclusion on NASA Intl. Space Station for water processing O₂ generator
- ◆ Bantam program dropped size by 10 and Gen II Program dropped size by 20
- ◆ Team of Makel, Case Western Reserve University (CWRU), Kennedy, and Glenn received the 2003 TGIR award

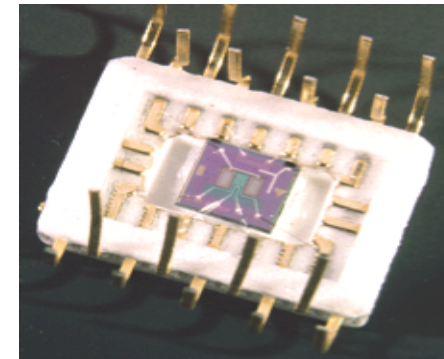
COMMERCIALIZATION

- ◆ Phase III funding of \$1.6M from NASA Glenn to target Bantam applications, ability to detect fires, and follow-on Gen II and Next Generation Launch technologies Leak Detection System research
- ◆ In-kind of \$25K each from Makel, Cleveland Metrohealth, and CWRU for asthma clinical and treatment application apparatus/mask research
- ◆ Working with Boeing on sensors for fire detection to be tested in July - \$30K
- ◆ Ford Motor has installed on hydrogen internal combustion vehicle and on U car concept vehicle at Detroit 2003 Auto Show

Glenn Research Center

3-108, Instrumentation and Controls

SBIR Program Opportunities, August 31, 2010



Microfabricated Hydrogen Sensors

GOVERNMENT/SCIENCE APPLICATIONS

- ◆ Responsive to NASA's Advanced Space Transportation Mission Safety Objective of reducing incidence of crew loss and reducing costs
- ◆ Marshall has funded Next Generation Launch Technology project with Makel, CWRU, & Kennedy
- ◆ NASA Kennedy is verifying flight qualification in development of postage size sensor
- ◆ System delivered and validated on two NASA Hyper X flights with demonstration considered a substantial program accomplishment
- ◆ Technology is used in the NASA Helios Program and on the Intl. Space Station for water processing O₂ generator

MSFC Phase II, NAS8-98028, 8/03

GRC 1999 Phase III, NAS3-99164

NASA Contact – Gary Hunter

Company Contact – Dr. Darby Makel

Design & Manufacture of Lightweight Composite Fan Case

WebCore Technologies, Inc.

Dayton, OH

INNOVATION

WebCore has developed a reliable, damage tolerant structural sandwich core material for “softwall” jet engine fan containment systems

ACCOMPLISHMENTS

- ◆ Demonstrated a 2x increase in retained mechanical properties after a subscale projectile impact test
- ◆ Manufactured damage-tolerant sandwich panel softwall fan case that boasts a 25-50% weight reduction vs. Ti and Al monolithic cases

COMMERCIALIZATION

- ◆ Collaborations ongoing with several aircraft engine manufacturers, and U.S. Air Force, and Navy
- ◆ Manufactured core material for Peacekeeper Boattail (ATK)
- ◆ Supplied prototype doors to Navy for ship-board trials
- ◆ Partner with several Ohio companies and Universities on the Ohio RCP (Research Commercialization Program) aimed at growing Ohio’s presence in wind blade, security and transportation markets
- ◆ Corporate partner in the new Ohio Center for Advanced Power and Propulsion
- ◆ Commercial sales doubled in 2006; similar trend predicted for 2007

Glenn Research Center
 Materials & Aviation Safety

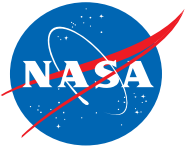
SBIR Program Opportunities, August 31, 2010



GOVERNMENT/SCIENCE APPLICATIONS

- ◆ Technology applicable to other damage-sensitive applications including aircraft leading-edge components, wind turbines, lightweight security barriers, and other fragment/explosion “ballistic protection” products
- ◆ Manufacturer of TYCOR® fiber reinforced foam composite sandwich core products for application in aerospace, defense, industrial, construction and marine markets
- ◆ Technology is supported by the Aviation Safety and Security Program
- ◆ Softwall prototype used to support Propulsion 21 Testing at NASA GRC

2002 Phase II, NNCO4CA18C, 4/05, rev. 4/07
 NASA Contact - Dale Hopkins
 Company Contact - Mike Sheppard



Compact Wireless BioMetric Monitoring and Real Time Processing System

Zin Technologies
Cleveland, OH

INNOVATION

- ZIN Technologies in collaboration with the Cleveland Clinic Foundation has developed a new **compact ambulatory biometric data system**:

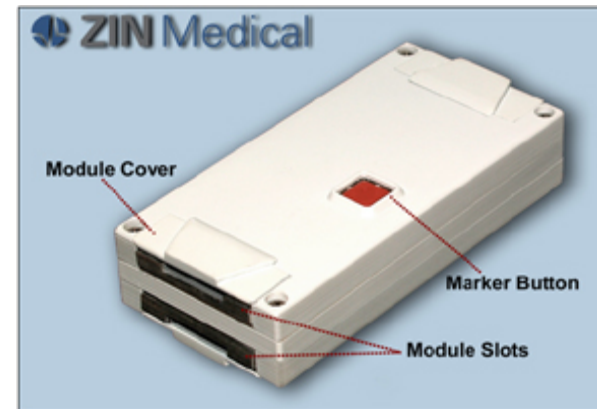
- Built over existing Compact Flash architecture
- Distributed computing architecture
- Auto ranging/programmable gains
- Channel independent programmable filters

ACCOMPLISHMENTS

- BioWATCH is a solution to the growing demand for **monitoring of patients/subjects outside of the clinical setting**. vMetrics is a small, reconfigurable device that records and transmits data from a wide variety of biomedical sensors including: ECG, EEG, SPO2, Joint Angle, Temperature, EMG, Weight, etc.

COMMERCIALIZATION

- Zin Technologies and the Cleveland Clinic Foundation formed a **partnership called Zin Medical to create a terrestrial BioWatch-derived product called vMetrics**. The system has been embraced by the medical research community as the only available instrument that can be used to monitor patients across a broad range of medical conditions.



Model of Zin Medical's BioWatch

GOVERNMENT / SCIENCE APPLICATIONS

- Zin Medical **is currently collaborating with Glenn Research Center in testing vMetrics for possible use in spaceflight to monitor the health of astronauts** while in space by sending data to doctors over wireless networks.
- BioWatch will affect the follow industries: Home Healthcare Monitoring, Clinical and research based health monitoring, Monitoring of occupational health hazards on worker health over long periods